



Profile of Critical Thinking Skills Test Assisted by E-Instrument as an Innovation of Conventional Student Tests to Improving Quality Education

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ABSTRACT

Objective: The study aims to determine the profile of students' critical thinking skills using E-Instruments. In this study, the profile of students' critical thinking skills, as assessed with conventional tests and E-instruments, is also compared. **Method:** The analysis of critical thinking skills profiles was conducted using quantitative methods. The study was conducted at a high school in East Java, Indonesia, that had used the independent curriculum. The population of this study was sampled purposively, comprising 65 students. **Results:** The profile of students' critical thinking skills in physics material is still relatively low. Based on the Wilcoxon test, the findings indicate that there is no significant difference between the test results obtained from conventional tests and those from E-instruments. **Novelty:** The novelty of this research lies in the application of E-instruments as a substitute for conventional instruments in measuring students' critical thinking skills. Its manifestation is in the implementation of point 4 of the SDCs, which aims to improve the quality of education in the field of digital technology. On the other hand, the level of students' critical thinking skills is determined by the difficulty of the material and the skill indicators that are drilled. In the future, comprehensive learning devices and models can be developed as alternatives to enhance students' skills, particularly in the use of digital technology, including media, devices, and assessment instruments, thereby increasing students' enthusiasm for learning.

INTRODUCTION

Quality education is a right for citizens, as outlined in one of the Sustainable Development Goals (SDGs), specifically SDG 4: Quality Education. To achieve quality education, consistency is necessary in adopting educational methods and systems with integrity (Hamad & Charles, 2024; Safitri et al., 2022). With quality education, human resources can further develop (Putri, 2025)—encompassing the growth of cognitive domains, abilities, knowledge, and skills. Competitive skills demands that are aligned with technology can be achieved by improving the quality of education in the country (Groumpas, 2021). The realization of quality education is significant for implementation through the improvement of 21st-century skills. 21st-century skills are currently necessary to enhance a person's capacity to coexist with the technological revolution (Lintangesukmanjaya et al., 2025; Jayadi et al., 2020).

21st-century skills encompass critical thinking, innovation, creativity, scientific knowledge, communication, and collaboration (Dignam, 2025; Astuti et al., 2024;

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